

**REMARKS**

**I. STATUS OF THE CLAIMS**

Claims 1-22 are currently pending. Applicant has amended claim 1 to correct a minor typographical error. Applicant has further amended claims 1, 20, and 21 and added claim 22. These amendments clarify that the invention is not limited to the use of calcium hydroxide. These amendments are supported by the specification at, for example, page 9, lines 20-23 and page 11, line 21 - page 12, line 3. No new matter has been added.

In addition, Applicant has amended the specification to state that the ratio of non-consumable solids to calcium ions ranges from 10:1 to 1:10. This amendment is supported by claim 20, which is original to the filing of this application, and, thus, no new matter has been added.

Finally, Applicant thanks the Examiner for withdrawing the Section 102 rejection over U.S. Patent No. 4,888,160.

**II. SECTION 103(a) REJECTION**

The Examiner has maintained the rejection of claims 1-21 under 35 U.S.C. §103(a) as allegedly unpatentable over Kosin et al. (U.S. Patent No. 4,888,160) in view of Bleakley (EP 0 604 095) for the reasons disclosed at pages 3 through 6 of the November 17, 2000 Final Office Action. Applicant respectfully traverses this rejection.

Applicant's invention, as recited in e.g., amended claim 1, is directed to a method of producing, continuously or semi-continuously, a product comprising precipitated calcium carbonate. The method comprises delivering, continuously or

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semi-continuously, an aqueous suspension of a source of calcium ions to a channel comprising at least two in-line mixers in series; introducing, continuously or semi-continuously, carbon dioxide into the channel at or before each of the mixers; and extracting, continuously or semi-continuously, from the channel an aqueous suspension of calcium carbonate produced by the reaction of the source of calcium ions and carbon dioxide in the channel.

In contrast, Kosin et al. teaches a batch process for producing precipitated calcium carbonate comprising injecting a gas containing carbon dioxide into a recycle system, which is in communication with a reaction vessel. The carbon dioxide containing gas is introduced at a turbulent point or area in the recycle system, which may contain in-line mixers. ('160 patent at col. 2, lines 43-49 & col. 3, lines 41-50.)

Applicant's invention is not obvious over Kosin et al. in view of Bleakley. As an initial matter, a *prima facie* case of obviousness requires three basic criteria to be met. M.P.E.P. § 2142. First, the Examiner must establish that Kosin et al. and Bleakley teach or suggest all the claim limitations. See M.P.E.P. § 2143.03. Second, the Examiner must establish that some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, exists to combine and/or modify the references. See M.P.E.P. § 2143.01. Finally, the Examiner must establish a reasonable expectation of success from the required combination and/or modification. See M.P.E.P. § 2143.02. In the present case, the references do not teach or suggest all the claim limitations or a suggestion or motivation to modify the references.

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As admitted by the Examiner, Kosin et al. does not teach or disclose a continuous or semi-continuous process with the continuous or semi-continuous delivery of a source of calcium ions, the continuous or semi-continuous introduction of carbon dioxide, and the continuous or semi-continuous extraction of calcium carbonate. (Final Office Action at 4). Likewise, the secondary reference, Bleakley, does not teach or suggest a continuous or semi-continuous process. Accordingly, the Examiner has relied upon the decision of *In re Dilnot*, 138 U.S.P.Q. 248 (C.C.P.A. 1963), to modify the teachings of the reference.

Applicants respectively submit that the Examiner's reliance on *In re Dilnot* is misplaced. It is well established that a motivation to modify the prior art must be present and must flow from some teaching in the art that suggests the desirability or incentive to make the modification needed to arrive at the claimed invention. See, e.g., *In re Napier*, 34 U.S.P.Q.2d 1782, 1784 (Fed. Cir. 1995). However, *In re Dilnot* does not provide the basis for the necessary motivation to modify Kosin et al. such that claims 1-21 would be rendered obvious. Applicant agrees with the Court of *In re Dilnot* that "[i]t is . . . well within the expected skill of the technician to operate a process continuously." *Id.* at 252. Yet, the Examiner has failed to meet the burden placed on the Office to provide factual evidence of how one skilled in the art would then interpret the reference in light of *In re Dilnot*. See *In re Zurko*, 59 U.S.P.Q.2d 1693, 1697 (Fed. Cir. 2001) ("With respect to core factual findings in a determination of patentability, . . . the Board cannot simply reach conclusions based on its own understanding or expertise . . . Rather, the Board must point to some concrete

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evidence in the record in support of these findings.") It is simply not enough for the Examiner to provide an opinion. *Id.*

Applicant submits that one skilled in the art reading Kosin et al. would not design a continuous process that renders the claims obvious. As noted above, Kosin et al.'s process utilizes a closed stirred tank reactor with a recycle line. ('160 patent at Examples 1-6 & Figure 1; Declaration of D. Skuse at ¶¶6.) Kosin et al. teaches the use of an agitator or stirrer in order to maintain homogeneity. ('160 patent at col. 3, lines 29-31; Declaration of D. Skuse at ¶¶6). The agitator/stirrer is explained to be necessary even after the carbon dioxide is no longer being added to carry out the reaction in the tank. ('160 patent at col. 4, lines 45-48; Declaration of D. Skuse at ¶¶6). Kosin et al. also discusses the necessity of the recycle line. ('160 patent at col. 5, lines 30-37 & Examples 1-6; Declaration of D. Skuse at ¶¶7). Accordingly, in view of these and other disclosures by Kosin et al., one of ordinary skill in the art would envision a continuous/semi-continuous process defined by a series of stirred tank reactors with one or more recycle lines. (Declaration of D. Skuse at ¶¶8). One of ordinary skill in the art would not envision a channel, as claimed by Applicant, wherein reactants enter and product leave on a continuous or semi-continuous basis. (*Id.* at ¶¶9).

Applicant submits that to conclude otherwise requires one to ignore the totality of the teachings of Kosin et al., as outline above. (See Declaration of D. Skuse at ¶¶6-7). As the C.C.P.A. has noted "[i]t is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the

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full appreciation of what such reference fairly suggests to one of ordinary skill in the art." *In re Wesslau*, 147 USPQ 391, 393 (C.C.P.A. 1965).

Since neither Kosin et al. nor the secondary reference, Bleakley, teaches or suggests a continuous process as claimed, a *prima facie* case of obviousness has not been established. M.P.E.P. § 2142. Accordingly, the rejection under Section 103 has been overcome and Applicant respectfully requests it be withdrawn.

### III. CONCLUSION

In view of the foregoing remarks, Applicant submits that this claimed invention, as amended, is neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicant therefore requests the entry of this Amendment, the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: January 21, 2002

By: 

Anthony A. Hartmann  
Reg. No. 43,622

Enclosure: Declaration of David R. Skuse  
Under 37 C.F.R. § 1.132

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**Appendix: Version With Markings To Show Changes Made**

**In the Specification:**

Page 9, line 20 -

In the method according to the invention the aqueous suspension in which the precipitated calcium carbonate is to be produced by reaction of calcium ions and carbonate ions from carbon dioxide may include non-consumable solids, ie solids which do not substantially take part in chemical reaction, to be entrained by and/ or bonded to the crystals of precipitated calcium carbonate produced in the aqueous medium. The non-consumable solids may comprise fibres, eg cellulose pulp fibres of the kind used in paper making, or present in a waste stream from a paper making operation. Where the fibres are present in a waste stream they may be present together with particulate material, eg a mixture of pigment or filler materials. In one embodiment, the ratio by dry weight of the non-consumable solids to calcium ion source, such as calcium hydroxide, prior to the addition of carbon dioxide ranges from 1:10 to 10:1.

**In the Claims:**

1. (Twice Amended) A method of continuously or semi-continuously producing a solid product comprising precipitated calcium carbonate suspended in an aqueous medium which method comprises

(i) continuously or semi-continuously delivering an aqueous suspension of [calcium hydroxide] a calcium ion source into and through a channel comprising a series of at least two static in-line mixers;

(ii) continuously or semi-continuously introducing carbon dioxide into the suspension in the channel at or before each of the mixers

whereby carbon dioxide and the aqueous suspension are intimately mixed in each mixer to facilitate reaction of the carbon dioxide with [calcium hydroxide] the calcium ion source suspended in the aqueous medium,

the [calcium hydroxide] calcium ion source in the suspension delivered to the series of static in-line mixers being progressively consumed and converted to calcium carbonate by reaction with the carbon dioxide as the suspension passes through the series, and

(iii) continuously or semi-continuously extracting from the channel an aqueous suspension of calcium carbonate produced by reaction of [calcium hydroxide] the calcium ion source and carbon dioxide in the channel.

20. (Amended) A method as claimed in claim 13 and wherein the ratio by dry weight of the non-consumable solids to [calcium hydroxide] calcium ion source delivered to be mixed with carbon dioxide in the first in-line static mixer is in the range of 1:10 to 10:1.

21. (Amended) A method as claimed in claim 20 and wherein an aqueous suspension of the non-consumable solids and an aqueous suspension of the [calcium hydroxide] calcium ion source are mixed together in a static in-line mixer to produce the aqueous suspension to be delivered to the first in-line static mixer.

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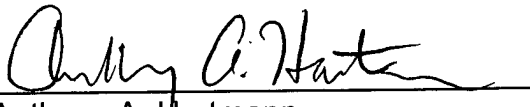
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Dated: January 18, 2002

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